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"The following case is still more striking. In the construction of the combs, for the raising of the young, as well as of the large cells for guarding honey and pollen, our Meliponæ and Trigonæ do not use pure wax, but mix it with various resinous and other substances, which give to this wax a peculiar color and smell. Now, I had brought home from two different and distant localities two communities of our most common Melipona (allied to *M. marginata*) of which one had dark reddish-brown, and the other pale yellowish-brown wax, they evidently employing resins from different trees. They lived with me for many years, and either continued, in their new home, to gather the same resins as before, though now, when they stood close together, any tree was equally accessible to the bees of either community. This can be hardly attributed to inherited instinct, as both belonged to the same species; nor to individual experience about the usefulness of the several resins (which seemed to serve equally well), but only, as far as I can judge, to tradition, each subsequent generation of young bees following the habits of their elder sisters."

ANTHROPOLOGY.¹

LANGUAGES OF AFRICA.—In the Journal of the Royal Asiatic Society, Vol. xiv, p. 160 (April, 1882), Mr. R. N. Cust gives us a paper with the following title: "Notice of the scholars who have contributed to the extension of our knowledge of the languages of Africa."

The continent is thus divided:

North of the Equator. I. Semitic group.

II. Hamitic group.

III. Nuba-Fulah group.

IV. Negro group.

South of the Equator. v. Bantu.

VI. Hottentot-Bushman group.

I. SEMITIC GROUP = Ethiopic, Old Ethiopic or Geez, Amharic, Tigre and Harári.

II. HAMITIC GROUP = Berber (Old Mauritanian or Numidian), Kabyle (Showiah and Zowiah dialects), Tuaricks, Zenágas (S. of Sahara), Suvah, and the Ethiopic sub-group of Somáli, Galla, Beja-Bishari, Falasha (Abyssinian Jews), Wogos, Dankali, Agau, Barea, Saho, Kunáma.

III. NUBA-FULA GROUP = Nubian sub-group of Nubian or Barabra, Tumale, Masai, Kwafi, Monbutto, and Niam-Niam, and the sub-group of Fulahs.

IV. NEGRO GROUP.—

A. *Western Negro-land*, Atlantic side, Senegambia and Guinea coast: Mandingo, Serawale, Vei, Susu, Mende, Sereres, Bullom, Temne, Sherbro—Bullom, Hausa, Sourhai (Timbuctoo), Kru, Grebo, Basa, Gwe, Yoruba, Ashante, Fanti, Akra (Gá), Affetu.

B. *Central Negro-land*, Basins of the Niger and the Tchad, Ibo, Efik, Nupe, Kanuri (Bornu), Baghirmi, Budduma, Logone, Wandala, Maba, Sara, Badi Baele, Kuka-Lisi.

C. *Upper Nile Basin*: Dinka, Shilluk, Bari, Bongo.

¹Edited by Professor OTIS T. MASON, 1305 Q street, N. W., Washington, D. C.

V. BANTU GROUP.—

- A. *Zulu-Kafir*: Kafir or Xosa, Zulu, Chuana, Suto.
- B. *East Bantu*, E. coast, from Victoria Nyassa to $23\frac{1}{2}^{\circ}$ S.: Swahili, Manganga, Makua, Yao, Nyassa, Makoude, Nyamwezi, Shambala, Gindo, Zirambo, Angazidja, Gogo, Boondei, Ruganda, Pokomo, Nika, Kamba, Chaga, Teita, Nyoro, Sena, Quilimane, Maravi, Inhanbane.
- C. *West Bantu*, from Cameron mountains to Tropic of Capricorn: Kongoese, Bunda, Herero (Damara land), Loango, Kongo, Mpwongwe, Bakule, Benga, Dualla, Jsubu, Fernandian.

VI. HOTTENTOT-BUSHMAN GROUP.—

- A. *Hottentot*. Namaqua only surviving dialect.
- B. *Bushmen*, including Central African pigmies.

Of course, Mr. Cust does not propose this as an exhaustive classification of African tribes or languages. The title of the article is sufficiently definite. Each tribal name is accompanied with the name of the author who has compiled a vocabulary, grammar or dictionary.

In a few months Mr. Cust will publish a language map of Africa with a bibliographical appendix showing where the language is spoken with reference to the map.

In the same number of the Journal is a discussion of the words Tartar and Tatar, with a decided leaning to the former.

ANTHROPOLOGY IN GREAT BRITAIN.—The November number of the Anthropological Institute Journal gives us the following original papers:

- On the aboriginal inhabitants of the Andaman islands (Part II). By E. H. Man.
- On the relation of Stone Circles to outlying stones or Tumuli, or neighboring hills, with some inferences thereon. By A. L. Lewis.
- The Papuans and the Polynesians. By C. Staniland Wake.
- On some rites and customs of Old Japan. By C. Pfoundes.
- English surnames from an ethnological point of view. By Dr. John Beddoe.
- On the survival of certain racial features in the population of the British Isles. By J. Park Harrison.

Inverting the order, Mr. Harrison looks for the evidence of race survivals in a large collection of photographs collected by the anthropometric committee of the British Association, with which he has brought into comparison a large series of observations in the continental areas from which the English race is believed to have come.

Mr. Beddoe has collected the names of peers, baronets, magistrates, M. P's, F. R. S's, College of Physicians, University Club, mayors, Knights of Bath, sergeants-at-law, subscribers to books and pauper lists. From these he has deduced the per cents. of Normans, Saxons, local names, occupations, nicknames, patronymics, Welsh, Scotch, Irish and foreign names.

Mr. Pfoundes has succeeded in rescuing from oblivion some remarkable old legends and survivals in Japan.

The paper by Mr. Wake is an attack upon Mr. Keane's classification of the Papuans and Polynesians. Such nice criticisms

have just enough of plausibility in them to give them effectiveness. But surely half a loaf is better than no bread, and the best possible arrangement under the circumstances is infinitely better than hopeless confusion.

Of the archæological papers it is scarcely worth while to speak, further than to say that archæologists should always scrupulously mark the relation of permanent remains to their environment.

With Mr. Man's papers we are always delighted. He has such a happy way of laughing out of countenance the vagaries of scientific guesses. It is related of a certain celebrated American general, who was making the tour of the world, that he said the French found great difficulty in speaking their own language so as to be understood by Americans. Mr. Man finds the Andamanese profoundly ignorant of many of the most fascinating ideas and customs that have been attributed to them. Guess, gentle reader, who is to blame, the Andamese or the lunatics who have reported them.

THE ANTIQUITY OF MAN.—In the "*Bibliothèque des Sciences Contemporaines*" is to be found the matured thought of the greatest specialists in France. Already we have *Biology*, by Letourneau; *Linguistique*, by Hovelacque; *Anthropologie*, by Topinard; *Sociology*, by Letourneau; *L'Espece Humaine*, by De Quatrefages; and now *Le Préhistorique Antiquité de l'homme*, by Gabriel de Mortillet, professor of prehistoric anthropology in the School of Anthropology, Paris. The volume contains 642 pages 12mo, and has sixty four figures in the text. In a general sense, the work represents the views of the majority of working archæologists of France, and it will not be amiss, therefore, to give an epitome of its contents. The introductory portion is chiefly historical, and well done; the science is divided into three parts:

1. Tertiary man, or the origin of humanity.
2. Quaternary man, or the development of humanity.
3. *L'homme actuel*, first horizon, prolegomena of history proper.

The evidences and data of the first part are marks on bones, crushed bones, pierced and engraved bones, human remains, evidences of fire, flaked flint, with closing chapters on the fossil apes.

The second era is divided into different epochs, as follows: Chelléen, Moustérien, Solutréen and Magdalénien.

The third part, or era, is similarly treated as the Robenhausien epoch.

Each of these partitions of archæology is treated with the finesse of a skilled workman and the confidence of an adept. It is painfully true, however, that much hay, straw and stubble are built into this stately edifice that the fires of afterthought will burn out. Nevertheless, if we do not make first efforts and failures, we shall never progress to second efforts and success. The following table exhibiting the Tertiary and Quaternary superposition in the

scheme of M. de Mortillet will show how elaborately the subject has been treated in the work :

Upper.	Secondary.	India; silicified forests, with cuttings (Marchesetti).
Inferior Tertiary. Eocene.	Soissonien. Londonien. Parisien. Bartonien. Ligurien.	Lignite of Montaign, boule en Craie (Melleville).
		Siderolite of Délémont; human skeleton (Quiquerez).
— Oligo- cene. }	Tongrien. Aquitanién.	Fontainbleau sandstone; petrified man over his horse. Limestone of Beauce, Thenay; flaked and broken flint (Bourgeois).
		Gravels of Orleans; marked bones (Nouel). Fresh-water formation of Gannat; gashed bones (Pomel). Fresh-water chalk of Billy; gashed bones (Laussedat). Sansan hill; broken bones (Garrigou). Marl of Anjou, Poreance; incised bones (Delaunay, Tournouér). Marl of Anjou, Chavagne-les-Eaux; incised bones (Farge).
Middle Tertiary.	Mayencien.	
Miocene.		Miocene of Dardanelles; chipped flint, scratched bones (Calvert). Mollasse of Central France; human skeleton (Gar- rigou).
	Helvetien.	
	Tortonien.	Fossiliferous diggings of Pikermi; broken bones (De Ducker). Trachytic conglomerate of Cantel; chipped flint (Tar- dy, Rames).
		Miocene and Pliocene deposits of Portugal; chipped flint (Ribeire).
Upper Tertiary.		Deposits of San Valentino; wrought bone (Ferretti). Ossiferous diggings of Val d'Arno; scratched bone (Desnoyers). Strata of San Giovanni; scratched bone (Ramorino). Deposits of balænotus at Monte-Aperto; scratched bones (Capellini). Blue marl of Savone; human bones (Issel). Piedmont; pierced scapula of mastodon (Gastaldi). Red crag of Suffolk; pierced sharks' teeth (Charles- worth).
Pliocene.		Alluvium of California; implements (Blake), skull (Whitney). Autry-Issard; silicified wood cut (Charnaux). Saint Prest.; scratched bones (Desnoyers), chipped flint (Bourgeois).
Quater- nary. }	Chelléen.	Alluvium; human bones and objects of industry.
	Moustérien. Solutréen. Magdalenien.	“ “ “ “ “ Grottoes “ “ “ “ “ “ “ “ “ “

BIBLIOTHECA AMERICANA.—Robert Clarke & Co., Cincinnati, have issued a catalogue of books and pamphlets relating to America, containing 6589 titles, with prices. Many of these works are rare and some of them almost out of the market. A reprint of John Leith's travels and captivity among the Indians, covering a period of eighteen years (1774–1792), in a limited edition, is announced. The same firm advertises Shea's Mississippi series in three volumes, and Dr. Brinton's Library of Aboriginal American Literature, the first number of which is now ready.

MICROSCOPY.¹

THE USE OF CHLOROFORM PREPARATORY TO IMBEDDING IN PARAFFINE.—As is well known to all who are familiar with the use of the microtome, objects to be imbedded in paraffine must be saturated with some solvent of paraffine. It has been found that the different solvents do not all give equally good results. The use of chloroform, which is now coming into general use, was first proposed by Dr. Giesbrecht,² of the Zoölogical Station at Naples; but was soon afterwards recommended by Professor Bütschli,³ to whom the Journal of the Royal Mic. Society (Oct., 1882, p. 708) has inadvertently given the credit of the discovery. Chloroform is unquestionably superior, in certain important respects, to oil of cloves, creosote or turpentine. *It is particularly to be recommended where there is danger of shrinking and brittleness.* The method of using it has been briefly stated in the October number of this journal (p. 783).

In the *Zoologischer Anzeiger*, No. 129, p. 20, Professor Kossmann, of Heidelberg, says that chloroform is the only solvent that can be successfully used in the case of objects with thick chitinous membranes.

In the use of chloroform two points must be carefully attended to, namely, the *complete saturation* of the object before it is placed in paraffine, and the *complete evaporation* of the chloroform before the object is finally imbedded. If the first point is not secured, of course the paraffine will not penetrate the object thoroughly; and if the chloroform does not wholly escape before the process of imbedding begins, the paraffine will be spongy, and consequently unfit for section-cutting. The evaporation of the chloroform may be effected in two or more ways. In all cases the object must lie in chloroform until thoroughly saturated. Then paraffine may be added gradually, as recommended by Dr. Giesbrecht; or the saturated object may be placed in a solution of paraffine in chloroform, as recommended by Professor Bütschli. After remaining here until it is thoroughly impregnated (an hour or less), it may

¹ Edited by Dr. C. O. WHITMAN, Newton Highlands, Mass.

² Giesbrecht, "Zur Schneide-Technik." *Zool. Anzeiger*, 1881, No. 92.

³ Bütschli. *Biol. Centralblatt*, vol. I, p. 591 (1881).